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Methamphetamine

Methamphetamine is a very addictive stimulant drug that activates certain systems in the brain. It is chemically related to amphetamine but, at comparable doses, the effects of methamphetamine are much more potent, longer lasting, and more harmful to the central nervous system (CNS).

Methamphetamine is a Schedule II stimulant, which means it has a high potential for abuse and is available only through a prescription that cannot be refilled. It can be made in small, illegal laboratories, where its production endangers the people in the labs, neighbors, and the environment. Street methamphetamine is referred to by many names, such as "speed," "meth," and "chalk." Methamphetamine hydrochloride, clear chunky crystals resembling ice, which can be inhaled by smoking, is referred to as "ice," "crystal," "glass," and "tina."

Methamphetamine is taken orally, intranasally (snorting the powder), by needle injection, or by smoking. Abusers may become addicted quickly, needing higher doses and more often. At this time, the most effective treatments for methamphetamine addiction are behavioral therapies such as cognitive behavioral and contingency management interventions.

Health Hazards

Methamphetamine increases the release of very high levels of the neurotransmitter dopamine, which stimulates brain cells, enhancing mood and body movement. Chronic methamphetamine abuse significantly changes how the brain functions. Animal research going back more than 30 years shows that high doses of methamphetamine damage neuron cell endings. Dopamine- and serotonin-containing neurons do not die after methamphetamine use, but their nerve endings ("terminals") are cut back, and regrowth appears to be limited. Noninvasive human brain imaging studies have shown alterations in the activity of the dopamine system. These alterations are associated with reduced motor speed and impaired verbal learning. Recent studies in chronic methamphetamine abusers have also revealed severe structural and functional changes in areas of the brain associated with emotion and memory, which may account for many of the emotional and cognitive problems observed in chronic methamphetamine abusers.

Taking even small amounts of methamphetamine can result in increased wakefulness, increased physical activity, decreased appetite, increased respira-

tion, rapid heart rate, irregular heartbeat, increased blood pressure, and hyperthermia. Other effects of methamphetamine abuse may include irritability, anxiety, insomnia, confusion, tremors, convulsions, and cardiovascular collapse and death. Long-term effects may include paranoia, aggressiveness, extreme anorexia, memory loss, visual and auditory hallucinations, delusions, and severe dental problems.

Also, transmission of HIV and hepatitis B and C can be a consequence of methamphetamine abuse. Among abusers who inject the drug, infection with HIV and other infectious diseases is spread mainly through the re-use of contaminated syringes, needles, and other injection equipment by more than one person. The intoxicating effects of methamphetamine, however, whether it is injected or taken other ways, can alter judgment and inhibition and lead people to engage in unsafe behaviors. Methamphetamine abuse actually may worsen the progression of HIV and its consequences; studies with methamphetamine abusers who have HIV indicate that the HIV causes greater neuronal injury and cognitive impairment compared with HIV-positive people who do not use drugs.

Extent of Use

Monitoring the Future* (MTF) Study

Past year** methamphetamine use in 2006 was reported by 1.8 percent of 8th-graders, 1.8 percent of 10th-graders (which represents a statistically significant decline from 2.9 percent in 2005), and 2.5 percent of 12th-graders. Perceived risk of harm from trying crystal methamphetamine, collected only for 12th-graders, increased from 54.6 percent in 2005 to 59.1 percent in 2006.

Methamphetamine Prevalence of Abuse Monitoring the Future Survey, 2006

	8th Grade	10th Grade	12th Grade
Lifetime	2.7%	3.2%	4.4%
Past Year	1.9	1.8	2.5
Past Month	0.6	0.7	0.9

Community Epidemiology Work Group***(CEWG)

In eight areas with data available from 2002 to 2005, sizable increases in primary methamphetamine treatment admissions as a proportion of total treatment admission, excluding alcohol, occurred in six; the increases were greatest in Arizona, Minneapolis/St. Paul, Los Angeles County, Denver, and Atlanta. Trend data show decreases in lab incidents from 2002 to 2005 in all CEWG States except Florida (up from

157 to 273), Michigan (from 225 to 341), and Pennsylvania (up from 30 to 79).

In the 2005 reporting period, primary treatment admissions for methamphetamine abuse as a proportion of all admissions, excluding alcohol, continued to be highest in Hawaii (56.3 percent) and San Diego (49.4 percent). Trend data from 2004 to 2005 show increases in methamphetamine treatment admissions as a proportion of all admissions, excluding alcohol, of between 4.1 and 4.7 percentage points in Atlanta, Los Angeles, and San Diego. The proportion of primary methamphetamine treatment admissions declined 5 percentage points in Arizona.

Demographic data available from seven CEWG areas suggest that, compared with cocaine and heroin admissions, primary methamphetamine admissions are more likely to be female, White, and younger than 25.

Unweighted DAWN *Live!* data for 2005 show that methamphetamine emergency department reports exceeded those for all other illicit drugs, excluding alcohol, in Phoenix and San Diego, and accounted for the second highest number of reports in San Francisco.

*National Survey on Drug Use and Health****(NSDUH)*

According to the 2005 NSDUH, 10.4 million Americans age 12 and older had tried methamphetamine at least once in their lifetimes. The rates for past month and past year methamphetamine use did not change between 2004 and 2005, but the lifetime rate declined from 4.9 percent to 4.3 percent. From 2002 to 2005, decreases were seen in lifetime (5.3 percent to 4.3 percent) and past year (0.7 percent to 0.5 percent) use, but not past month use.

Rates of past year methamphetamine use among persons aged 12 or older were among the highest in Nevada (2.0 percent), Montana (1.5 percent), and Wyoming (1.5 percent). Young adults aged 18 to 25 were more likely to use methamphetamine in the past year than youths aged 12 or 17 and adults aged 26 or older.

Other Information Resources

For more information on the effects of methamphetamine abuse and addiction, visit **www.drugabuse.gov/drugpages/methamphetamine.html**.

To find publicly funded treatment facilities by state, visit www.findtreatment.samhsa.gov.

[1] Street names for drugs of abuse can be found at www.whitehousedrugpolicy.gov/streetterms/default.asp.

* These data are from the 2006 MTF, funded by the National Institute on Drug Abuse, National Institutes of Health, DHHS, and conducted by the University of Michigan's Institute for Social Research. The study has tracked 12th-graders' illicit drug abuse and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at **www.drugabuse.gov**.

** "Lifetime" refers to use at least once during a respondent's lifetime. "Past year" refers to use at least once during the year preceding an individual's response to the survey. "Past month" refers to use at least once during the 30 days preceding an individual's response to the survey.

*** CEWG is a NIDA-sponsored network of researchers from 21 major U.S. metropolitan areas and selected foreign countries who meet semiannually to discuss the latest epidemiology of drug abuse. CEWG's most recent reports are available at **http://www.drugabuse.gov/about/organization/cewg/pubs.html**.

**** NSDUH (formerly known as the National Household Survey on Drug Abuse) is an annual survey conducted by the Substance Abuse and Mental Health Services Administration. Findings from the latest survey are available at www.samhsa.gov.

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